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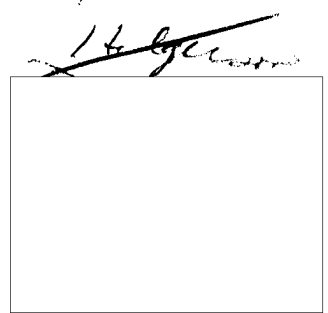
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Cross-Impact Analysis

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RP 77-10048
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PROJECT REPORT

CROSS—IMPACT ANALYSIS

The Methods and Forecasting Group of the Agency's former Office of Political Research carried out a highly successful test application of the cross-impact technique for intelligence forecasting in the Spring of 1976. The purpose of this report is to describe the method itself and how it was used, as well as to project the future utility we foresee for the use of cross-impact analysis as an intelligence tool.

Of all the methodological issues facing the political forecaster, the problem of the linkage between events is probably the hardest to deal with. The interacting effects among forecasted items tend to be important not only because developments in one area are correlated with or spur developments in other areas, but also because various separate occurrences often allow for unexpected outcomes to problems, or can be fitted together to make new wholes that are greater than the sum of their parts. Today, forecasts or estimates are often simply lists of potential future events, considered against a general scenario which serves only as a mildly constraining backdrop. Without considering causal relationships of the forecasted items, these lists might contain mutually exclusive items, or the chances of occurrence of certain items on the list might be enhanced in view of the occurrence or non-occurrence of others.

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In general, we were impressed most by the education and learning process which the participants experienced while deciding upon their cross-impact estimates. This technique leads analysts to use their full potential because it requires them to articulate their assumptions explicitly and to examine their consistency. The discipline involved in the selection of items, and particularly the systematic questioning necessary to establish cross-impacts, was often enlightening. The analysts were asked to decide what events might be important and how they might affect one another. This confrontation often illustrated that issues once believed to be simple and independent were, in reality, interrelated. Simply completing two columns of the matrix forced enough introspection to be useful. And, of course, the mathematical play of the basic matrix using new initial conditions to simulate policies or less likely courses of events showed unexpected secondary and tertiary consequences of these developments or policy choices.

In using cross-impact techniques, OPR sought to find what we have called the "conditional probabilities" of forecasted items in a set, in full consideration of the potential interactions among all of them. The systematic description of all potential interactions and the assessment of the possible strength of these interactions is complex but methodologically important, since the combination of these descriptions and clearly stated assumptions may provide new insight into past events and also permit greater accuracy and precision in forecasting. A well-adapted use of the cross-impact approach for intelligence would almost certainly permit the exploration of the side-effects of decisions under consideration. It might also be useful to illuminate less expensive means of serving intelligence needs by investment in high-payoff areas which initially seem unrelated or only weakly linked to certain policy concerns. From an intelligence point of view, it could also help to target previously neglected areas of analysis, the study of which might yield more complete explanations of a larger problem.

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